

South Coast AQMD NGV Projects Update

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NGVTF Technical Committee Meeting
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Overview

- Next Generation NGV Projects
- SCAQMD Clean Fuels Projects
- NG Engine Availability

Next Generation NGV Projects

- Cummins Westport – 5.9L B Gas Plus Engine
 - *Status:* Completed, 0.15 NOx, 0.01 PM
- Teleflex GFI – 6L GM Engine
 - *Status:* Completed, 0.08 NOx, 0.002 PM
- Cummins – 8.3L C Gas Plus Engine
 - *Status:* June 2005, 0.2 NOx, 0.01 PM
- Mack – 12L Engine
 - *Status:* 1st Quarter 2006, 0.5 NOx, 0.01 PM
- Cummins Westport – Market Assessment
 - *Status:* June 2004

SCAQMD Clean Fuels Projects

Engine-Related

- Vehicle Demo./Deployment – Teleflex GFI
- CNG Hybrid Electric 45 ft Transit Bus – NABI
- Particulate Traps for NG Engines –
West Virginia Univ., Cummins Westport
- Advanced Oxidation Catalysts for NG Engines –
ECS/Lubrizol
- Convert 10 Gasoline SUVs to CNG – EVO

SCAQMD Clean Fuels Projects

Engine-Related

- Development of Natural Gas Hydraulic Hybrid Vehicle – Permo-drive, Waste Management
- Variable Gaseous Fuel Mixture Control – University of California Riverside CE-CERT

SCAQMD Clean Fuels Projects

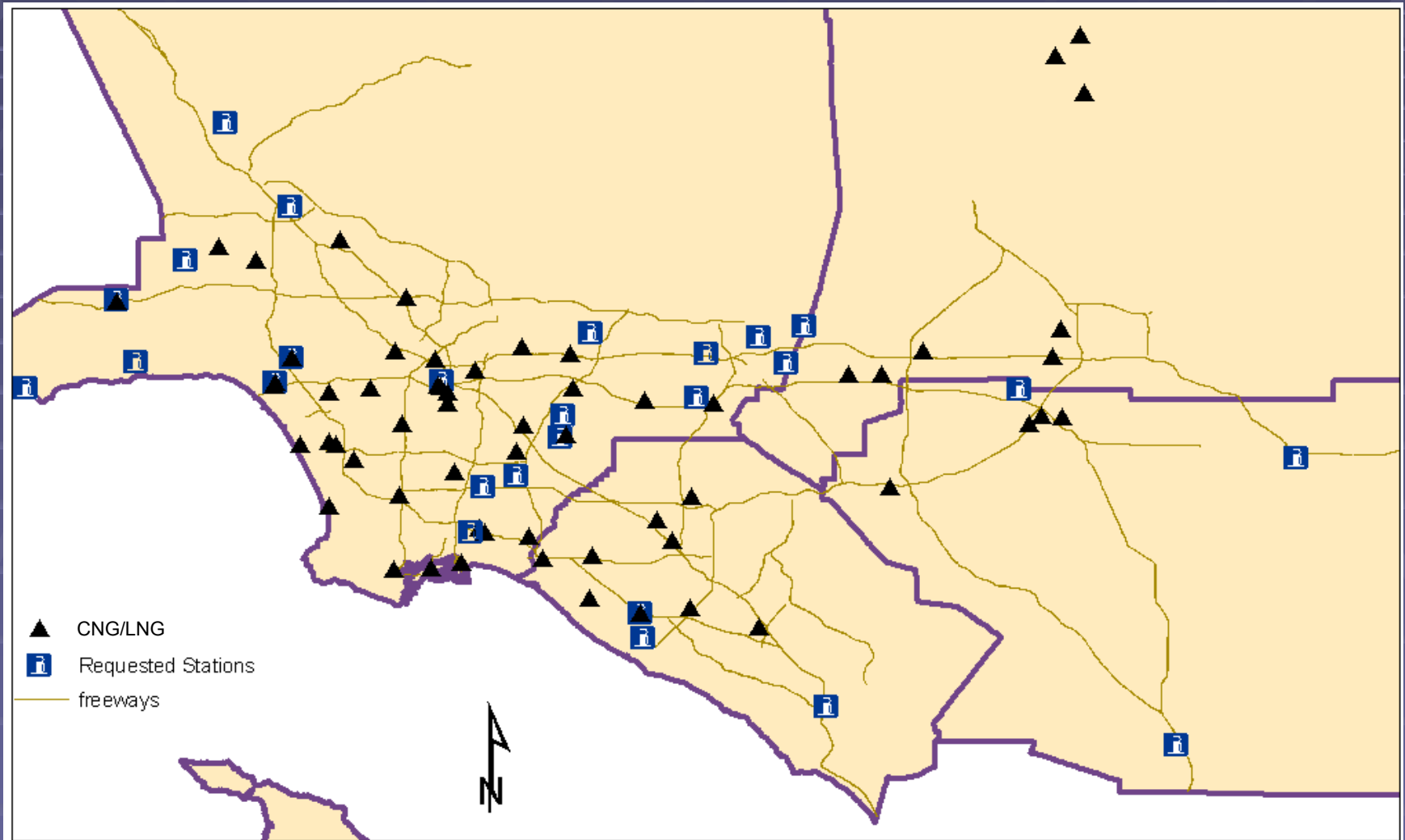
Fuel-Related

- Feasibility to Convert CNG Refueling Stations to Hydrogen Refueling – Sunline
- CNG/Hydrogen Blends – Sunline, Cummins Westport
- Local LNG Production
- CNG/LNG Refueling Network Expansion

Current AQMD Natural Gas Infrastructure Expansion Solicitation

- Hydrogen Fueling Compatibility
- Current Solicitation –
26 Proposals Submitted
- Need to Balance Between Geographic Gaps and Increased Fueling Capacity Projects Given Limited Funding Resources

Continued Expansion of the Natural Gas Refueling Infrastructure



Natural Gas Engine Availability

Platform Development Issues

- Light- and Medium-Duty Vehicles
- Mid-Size School Buses
- Heavy-Duty Vehicles



Challenges

- Vehicle Cost Premiums
- Competing Gasoline and Diesel Prices
- Business Case For Commercialization

Light- and Medium-Duty Platforms

- Taxicabs
- Airport Shuttle Vehicles
- Limousines



- Natural Gas Powered Ford Crown Victoria and Other Ford Products Not Available After 2004 MY
- Only One Natural Gas Passenger Car – Honda GX (AT-PZEV Certified)
- GM to Continue Natural Gas Product Line Beyond 2005

School Bus Platforms

- Type C (Conventional)
- Type A (Van Cut-away)
- Natural Gas Type C
Not Commercially Available
- Type A No Longer Available
After 2004 MY (Currently Using Ford
Natural Gas Engines)



Heavy-Heavy Duty Engines

- Over the Road and Transfer Vehicles



- Clean Air Powers/Caterpillar –
No Business Decision At This Time
- Cummins/Westport - 14.9L, 400 hp –
HPDI Engine Commercialization On-Hold
- Detroit Diesel – Series 60G –
No Plans To Produce

Future Project Considerations

- Vehicle Deployment as Part of Research, Development and Demonstration
- Identify Application Niches to Participate in Projects
- Develop Plan for Commercialization